

A COMPARATIVE STUDY BETWEEN “PATWARDHAN’S TECHNIQUE” AND “PUSH AND PULL TECHNIQUE” DURING CAESAREAN SECTION IN SECOND STAGE OF LABOR IN A TERTIARY HEALTH CARE CENTRE

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Abstract

Background: The incidence of second stage caesarean section is more common in developing countries, where babies are often delivered by traditional birth attendants at home and where the mothers report to the hospital very late. Maternal complications include haemorrhage, longer hospital stay, bladder trauma and broad ligament hematoma. Foetal complications include hypoxia and direct trauma. Obstetricians have tried many techniques to deliver the baby; for example, by pushing the deeply engaged head through vagina to deliver the baby or by pulling the legs of the baby. Patwardhan's technique is a unique technique to ease the delivery of deeply engaged head in second stage of labour with less maternal and foetal morbidities. To, compare the maternal and foetal outcome in second stage of caesarean section by “Patwardhan's” technique with “Push and Pull” technique. **Materials and Methods:** 100 women in second stage of labor with the fetal head deep in the pelvis were enrolled with singleton pregnancy, vertex presentation, occipito-anterior or posterior position and deeply impacted head and were assigned to either “Patwardhan's” technique or “Push and Pull” technique. Uterine incision extension, broad ligament hematoma, atonic and traumatic post-partum hemorrhage and bladder injury were recorded. Neonatal outcome were recorded by Apgar score at 1 minute and 5 minutes. **Result:** Duration of uterine incision to delivery time and duration of surgery was significantly less in Patwardhan's group compared to other group. Uterine incision extension was seen in 22% of women during delivery of baby by Push and Pull technique. There was no case of uterine incision extension when Patwardhan's technique was used. So the association between the uterine incision extension and Push and Pull technique was statistically highly significant (p value=0.0004). 14% and 22% of mothers required blood transfusion recruited to the Patwardhan's and Push and Pull technique group respectively. The neonatal outcome was similar to both the groups. **Conclusion:** Patwardhan's technique of delivering fetus in second stage caesarean section is a safer alternative to the traditional “Push/Pull” technique.

INTRODUCTION

Lower segment caesarean section (LSCS) represents the most significant operative intervention in obstetrics. But it is associated with higher risk of adverse outcome for both mother and foetus compared to vaginal delivery particularly in second stage.^[1] The incidence of second stage caesarean

section is more common in developing countries, where babies are often delivered by traditional birth attendants at home and where the mothers report to the hospital very late, when the traditional birth attendants fail in their endeavour. Second stage caesarean sections account for one fourth of all primary caesarean sections in developing countries.^[2]

When there is full cervical dilatation condition and foetal head are deeply impacted in pelvis, LSCS is then technically difficult as the lower segment is thinned out and oedematous, hence associated with an increased incidence of maternal and foetal morbidities. Maternal complications of second stage caesarean sections include major haemorrhage, longer hospital stay, greater risk of bladder trauma and extension tears of the uterine angle leading to broad ligament hematoma.^[3] Foetal complications include hypoxia and direct trauma resulting from difficulty in delivering the foetal head.

The risks of postpartum maternal complications directly correlate with the duration of the second stage of labour and the mode of delivery.^[4] Where there is a failed instrumental delivery or sequential use of ventouse and forceps, there is significant increased risk of both neonatal and maternal injury.^[5] The risk of unintentional extension of uterine incisions is greater in caesarean sections performed in the second stage of labour compared to those performed in first stage.

Obstetricians have tried many techniques to deliver the baby; as for example, by pushing the deeply engaged head through vagina to deliver the baby cephalic (“push method”) or by pulling the legs of the baby and delivering as breech (pull method).^[6-9] All the above said manoeuvres have their own maternal and foetal complications.^[10-12]

Patwardhan’s technique is a unique technique introduced by Dr B.D. Patwardhan in 1957 to ease the delivery of deeply engaged head in second stage of labour with less maternal and foetal morbidities, but it is still not very popular among obstetricians.^[10,11]

AIM

Aim of the present study is to compare the maternal and foetal outcome in second stage caesarean section done by “Patwardhan’s” technique with “Push and Pull” technique.

MATERIALS AND METHODS

After Institutional Ethical Committee clearance and informed patient consent, a prospective, randomized study was conducted in the department of obstetrics and gynaecology of our institute over a period of 18 months from January 2019 to June 2020.

The study enrolled 100 women in second stage of labour with the foetal head deep in the pelvis. Patients with singleton pregnancy, vertex presentation, occipito-anterior or posterior position and deeply impacted head in second stage of labour were included in the study. Parturient with multi-foetal pregnancy, non-vertex presentation, anaemia and coagulation disorder were excluded from the study. Randomization was done by a computer generated random number contained in a sealed envelope given to the parturient and mode of delivery was determined by the group to which the number belongs to.

They were assigned to the either “Patwardhan’s” technique group or “Push and Pull” technique group. So, each group consisted of 50 mothers. Among the 50 mothers recruited in the “Push and Pull” group, alternate mother was delivered by either “Push” technique or “Pull” technique. So, in the “Push and Pull” group 25 mothers were delivered by Push technique (head first) and 25 mothers were delivered by Pull technique (breech first).

After delivery of the baby, uterine incision extension, broad ligament hematoma, atonic and traumatic post-partum haemorrhage and bladder injury were recorded. Blood transfusion if required in perioperative period was also recorded. Regarding the neonatal outcome Apgar score at 1 minute and 5 minutes, birth weight and sick neonatal care unit (SNCU) admission were recorded. All the required data were collected through relevant questionnaire and available documents were written on previously designed proforma.

RESULTS

46% mothers enrolled in the study were primigravida and there was no statistically significant difference between the two groups. 98% mothers who were enrolled in the study were booked for antenatal care.

Age, parity, socio economic status, occupation, gestational age, hemoglobin status, approximate birth weight of the fetus of all the women who were selected for study, were also compare in [Table 1].

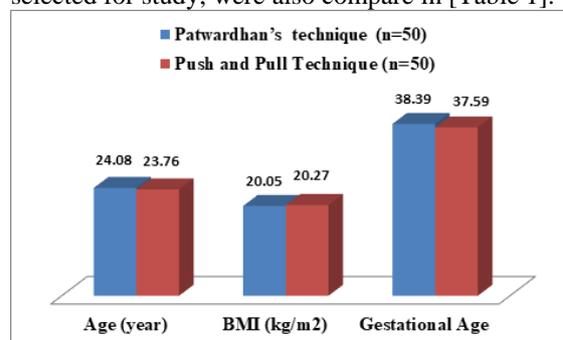


Figure 1: Demographics profile

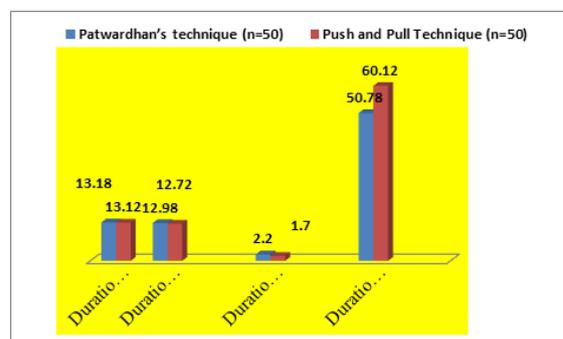


Figure 2: Labour Characteristics in the Women who underwent C-Section during Second Stage of labour

From [Table 2] it is observed that duration of uterine incision to delivery time and duration of surgery

was significantly less in Patwardhan's group compared to other group.

Table 1: Demographic Profile

	Patwardhan's technique (n=50)	Push and Pull Technique (n=50)	p value
Age (year)	24.08±5.64	23.76±6.31	0.7279
BMI (kg/m ²)	20.05±4.21	20.27±3.45	0.7457
Gestational Age	38.39±2.03	37.59±2.11	0.1213

Table 2: Labour Characteristics in the Women who underwent C-Section during Second Stage of Labour

	Patwardhan's technique (n=50)	Push and Pull Technique (n=50)	P value
Duration of labour(hours)	13.18 ±3.2305	13.12±3.2679	0.0514
Duration of Rapture of Membranes	12.98 ±3.8145	12.72±2.9695	0.7045
Duration of Uterine Incision to Delivery Time (min)	2.2 ±0.7825	1.7±0.8816	0.0049
Duration of Surgery (in minutes)	50.78±4.0823	60.12±3.8895	0.0056

Table 3: Comparison of Maternal Complications Observed among the Two Study Groups

	Patwardhan's technique (n=50)	Push and Pull Technique (n=50)	P value
Uterine incision extension	0	11 (22%)	0.0004
Broad ligament haematoma	0	2 (4%)	0.0786
Atonic and traumatic PPH	4 (8%)	6 (12%)	0.5049
Need for blood transfusion	7 (14%)	11 (22%)	0.033
Urinary bladder injury	0	0	-

Table 4: Comparison of the Two Study Groups Regarding Fetal Outcome

Fetal Outcome	Patwardhan's technique (n=50)	Push and Pull Technique (n=50)	
APGAR Score at 1 min			
<7	23 (46%)	26 (52%)	>0.05
>7	27 (54%)	24 (48%)	>0.05
APAGAR Score at 5 min			
<7	7 (14%)	5 (10%)	>0.05
>7	43 (86%)	45 (90%)	>0.05
SNCU Admission	4 (8%)	5 (10%)	>0.05

Uterine incision extension was seen in 22% of women during delivery of baby by Push and Pull technique. There was no case of uterine incision extension when Patwardhan's technique was used. So the association between the uterine incision extension and Push and Pull technique was statistically highly significant (p value=0.0004). 14% and 22% of mothers required blood transfusion recruited to the Patwardhan's and Push and Pull technique group respectively. This was statistically significant (p value=0.033) In [Table 3].

The neonatal outcome was similar to both the groups. The SNCU admission was mainly because of birth asphyxia. However no neonate was observed to have any birth injury in either group In [Table 4].

If the calculated p-value is below the threshold chosen for statistical significance (usually 0.10, 0.05, or 0.01 level), then the null hypothesis is rejected in favor of the alternative hypothesis p-value ≤ 0.05 was considered statistically significant.

DISCUSSION

Second stage caesarean sections account for one fourth of all primary caesarean sections.^[2] Caesarean sections done at full cervical dilatation with deeply impacted foetal head are technically difficult as the lower segment is thinned out and

oedematous; and hence associated with an increased incidence of maternal and foetal morbidities.^[13-15] Maternal complications of second stage caesarean sections include major haemorrhage, longer hospital stay, greater risk of bladder trauma and extension tears of the uterine angles leading to broad ligament hematoma.^[3,16]

Foetal complications include hypoxia, resulting from difficulty in delivering the foetal head, and direct trauma. The risks of postpartum maternal complications directly correlate with the duration of the second stage of labour and the mode of delivery.^[4]

As far as duration of skin incision to delivery time was concerned, the "Push/Pull" technique required a mean 1.7 minutes to deliver a baby. On the other hand, in the Patwardhan's group the mean time to deliver a baby after skin incision was 2.2minutes. The difference was statistically significant (p-value 0.0049).

When the total durations of caesarean sections between the two techniques were compared, it was seen that in the Patwardhan's group, the mean duration of surgery was 50.78 minutes and, in the "Push/Pull" group the mean duration was 60.12minutes. As the p-value was 0.0056, caesarean sections done by the Patwardhan's technique took significantly less time than in the "Push/Pull" technique. The reason behind total duration of

surgery in the Patwardhan's group being shorter than that in the "Push and Pull" technique was probably due to lower incidence of complication in the Patwardhan's group.

When the incidence of uterine incision extension between the two techniques was compared, it was seen that in the "Push and Pull" group, there were 11 cases of uterine incision extension, whereas, in the Patwardhan's group, there was no such incident. When compared statistically, as far as uterine incision extension was concerned, Patwardhan's technique was a safer alternative to "Push and Pull" technique as per our study. This indicates the safety and efficacy of this technique better in second stage caesarean sections. Our observation is similar to Khosla et al,^[17] who also reported that no extensions occurred when Patwardhan technique was used. PK Saha et al,^[18] in their study also found similar results as our study. Bansiwala R et al,^[19] also had similar observations in their study.

Regarding broad ligament hematoma, there was no such incident in the Patwardhan's group in the present study. On the other hand, in the "Push and Pull" group, 4% cases of broad ligament hematoma were reported. However, the difference was not statistically significant. This discrepancy between the statistical significance of incidence of uterine incision extension and the incidence of broad ligament hematoma was probably due to prompt and expert management in case of uterine incision extension.

No statistically significant difference was observed between pre-operative haemoglobin level and post-operative haemoglobin levels among the women recruited in the two study groups. Incidence of PPH was also similar among the groups.

As far as the need for blood transfusion was concerned, a total of 11 mothers received blood transfusion in the "Push/Pull" technique, whereas 7 mothers received blood transfusion in the Patwardhan's group. The difference was statistically significant with a p-value of 0.033. Saha PK et al and Beeresh CS et al observed similar results.^[18-20]

As far as the neonatal outcomes were concerned the two techniques were comparable as there were no statistically significant difference between APGAR score at 1 minute, APGAR score at 5 minutes and SNCU admission. Previous studies observed that babies born in second stage caesarean sections do have increased incidence of birth asphyxia due to prolonged second stage of labour.^[11,12,15] However, our study indicated that there was no increased risk of neonatal injuries with this technique, as was compared to that seen in "Push" or "Pull" method of extraction. Similar results were found by Keepanasseril et al.^[21]

Therefore the study of 100 patients revealed Patwardhan's Technique having significantly less number of uterine extensions, broad ligament hematoma, post-partum haemorrhage and need for blood transfusions which thus amounted to

decreased maternal morbidity. Similar result was observed by previous studies.^[22-24]

CONCLUSION

The Patwardhan technique needs expertise but is safe and has minimal complications compared to the push method if anticipated and done skilfully. It is easy to learn and needs to be more widely publicized and utilized. It has been shown that the method of delivery of Patwardhan for the second stage of labour confers a considerable advantage in the prevention of maternal morbidity in our institution. So, it can be concluded from the study that, Patwardhan's technique of delivering foetus in second stage caesarean section is a safer alternative to the traditional "Push/Pull" technique.

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